



Institute of Paper Science and Technology
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CONTINUOUS BASELINE STUDY

Project 1108-13

Progress Report 118

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

May 1, 1957

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

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In conjunction with the F. K. I. Continuous Baseline Study, The Institute of Paper Chemistry has been directed to identify the participating mills by means of a scrambled system of code letters. Under this system, which was initiated in Progress Report 105, each mill is identified by a code letter different from that used for the previous month.

During the period from April 1 to April 30, ninety-one different sample lots of 42-lb. Fourdrinier kraft linerboard were submitted by sixteen different F.K.I. mills to The Institute of Paper Chemistry for testing. In addition, three samples of drum linerboard and two samples of miscellaneous linerboard were submitted for evaluation by one of the participating mills; the results for these samples are tabulated separately. A tabulation of the number of samples classified according to mill may be seen in Table I.

TABLE I

DISTRIBUTION OF 42-LB. LINERBOARD SAMPLES

Mill Code	Samples Submitted
A	4
B	6
C	9
D	0
E	3
F	0
G	8
H	8
I	3
J	4
K	6
L	10
M	5
N	4
O	3
P	8
Q	4
S	6
Total	<hr/> 91

These sample lots were tested for basis weight, caliper, bursting strength, and Elmendorf tear. The average strength results for each mill may be seen in Table II and are graphically presented in Figures 1 to 5. In addition to a comparison of the mill averages for the various tests, Table II also shows the current F.K.I. averages, the cumulative F.K.I. averages, and the F.K.I. indexes. The cumulative F.K.I. average is based on the results for the previous twelve months excluding the current period. Hence, in the case of the current report, it covers the period from April 1, 1956, to March 31, 1957. The F.K.I. indexes are obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

The F.K.I. index provides a ready means of comparing the current quality with previous results. For example, the current F.K.I. average basis weight is 43.0 lb., and the cumulative F.K.I. average basis weight is also 43.0 lb. Hence, the index for basis weight determined in per cent as indicated above is 100.0. This signifies that the current average basis weight is the same as the cumulative average.

A comparison of the results in Table II and Figure 1 shows that the average basis weight results for all mills except H conform to the 42-lb. specification set forth in Rule 41. Mill C had the highest average basis weight, it being 44.1 lb. or approximately 5.0% higher than the 42-lb. specification. On the other hand, Mill H had the lowest average basis weight, it being 41.9 lb. or approximately 0.2% lower than the 42-lb. specification.

The amount by which the mills vary from the 42-lb. specification is as follows:

Mill Code	Per Cent
A	+1.4
B	+4.0
C	+5.0
D	—
E	+2.1
F	—
G	+4.8
H	-0.2
I	+2.4
J	+1.0
K	+1.2
L	+2.4
M	+1.0
N	+2.4
O	+2.9
P	+4.5
Q	+1.0
S	+1.9

A comparison of the average basis weight data for the previous period with the current F.K.I. average indicates that the basis weight results have decreased slightly—from 43.1 to 43.0 lb.

A comparison of the average caliper values for the various mills (see Figure 2) shows that the mill averages vary from a low of 12.1 points for Mill H to a high of 13.6 points for Mill I. The current F.K.I. average is 12.7 points, which is the same as the cumulative F.K.I. average of 12.7 points.

The average bursting strength values obtained for each mill are graphically presented in Figure 3. It may be observed in Table II and

Figure 3 that the average bursting strength values for the various mills range from a low of 101 for Mill E to a high of 117 for Mill O. The current F.K.I. average bursting strength is 110 p.s.i. g., slightly higher than the cumulative F.K.I. average of 109 p.s.i. g.

A graphic comparison of the Elmendorf tear results for the various mills is given in Figures 4 and 5. The data of Table II show that Mill B had the highest average machine direction tear value of 376 units whereas Mill A had the lowest value of 299 units. Mill B also had the highest cross-machine direction tear value of 405 units; Mill J had the lowest value of 348 units. It may be noted that the current F.K.I. machine direction tear average is slightly lower than the cumulative F.K.I. average whereas the current F.K.I. cross-machine direction tear average is the same as the cumulative F.K.I. average.

A comparison of the F.K.I. indexes indicates that, for the current period, the current F.K.I. averages for basis weight, caliper, and cross-machine direction tear are the same as the corresponding cumulative F.K.I. averages, whereas the current F.K.I. average for bursting strength is slightly higher than the cumulative average, and the current F.K.I. average for machine direction tear is slightly lower than the cumulative F.K.I. average.

In order to compare the variation within a given mill, the test results for each particular mill have been tabulated in Tables III to XX for mills A to S, respectively.

The results obtained on the special drum stock may be seen in Table XXI.

In addition to the current and cumulative averages, the mill factor and mill index are given for each mill. The cumulative mill average is the average test result obtained on the samples submitted by the particular mill for the previous twelve months excluding the current period. The mill factor and the mill index are obtained as follows:

$$\frac{\text{current mill average}}{\text{cumulative mill average}} \times 100 = \text{mill factor (\%)}$$

$$\frac{\text{current mill average}}{\text{cumulative F.K.I. average}} \times 100 = \text{mill index (\%)}$$

The mill factor and the mill index are a convenient means for comparing the current mill results either with the previous results for that particular mill or with the cumulative F.K.I. results. The reports also present a comparison of the test data obtained at the mills with test data obtained at The Institute of Paper Chemistry. These test data are presented and discussed on subsequent pages of this report.

It may be noted in Tables III through XXI that the test data include information about the sheet finish. The summarized results for the mills which submitted sample lots during the current period are as follows:

Mill Code	No. of Sample Lots		
	W.F.	D.F.	Misc.
A	4 ^a		
B	6		
C	9		
D	0		
E	3		
F	0		
G	8		
H	8 ^a		
I	3 ^a		
J	4		

Mill Code	No. of Sample Lots		
	W.F.	D.F.	Misc.
K	6		
L	10		
M	5 ^a		
N	4		
O	3 ^a		
P	8		
Q	4		
S	6		
R ^b	3		

^a One side only

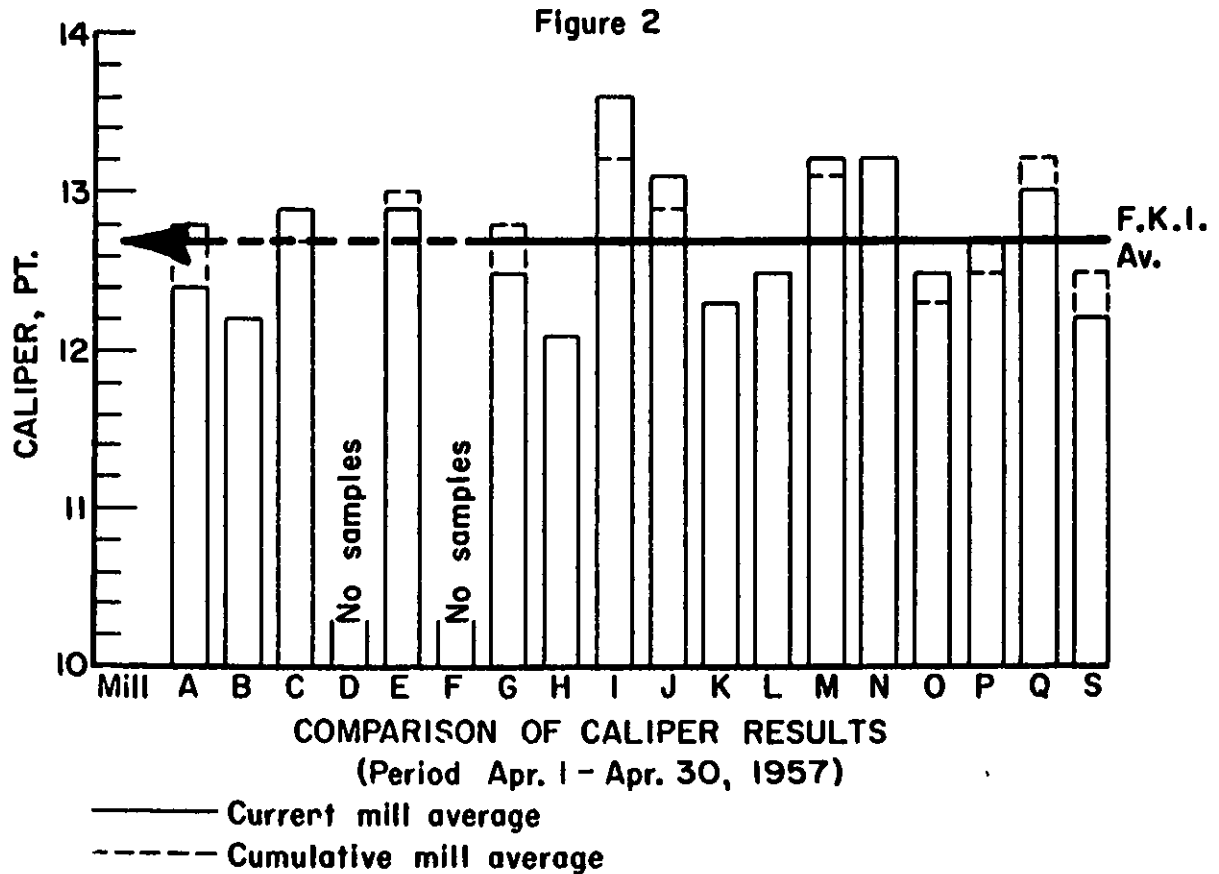
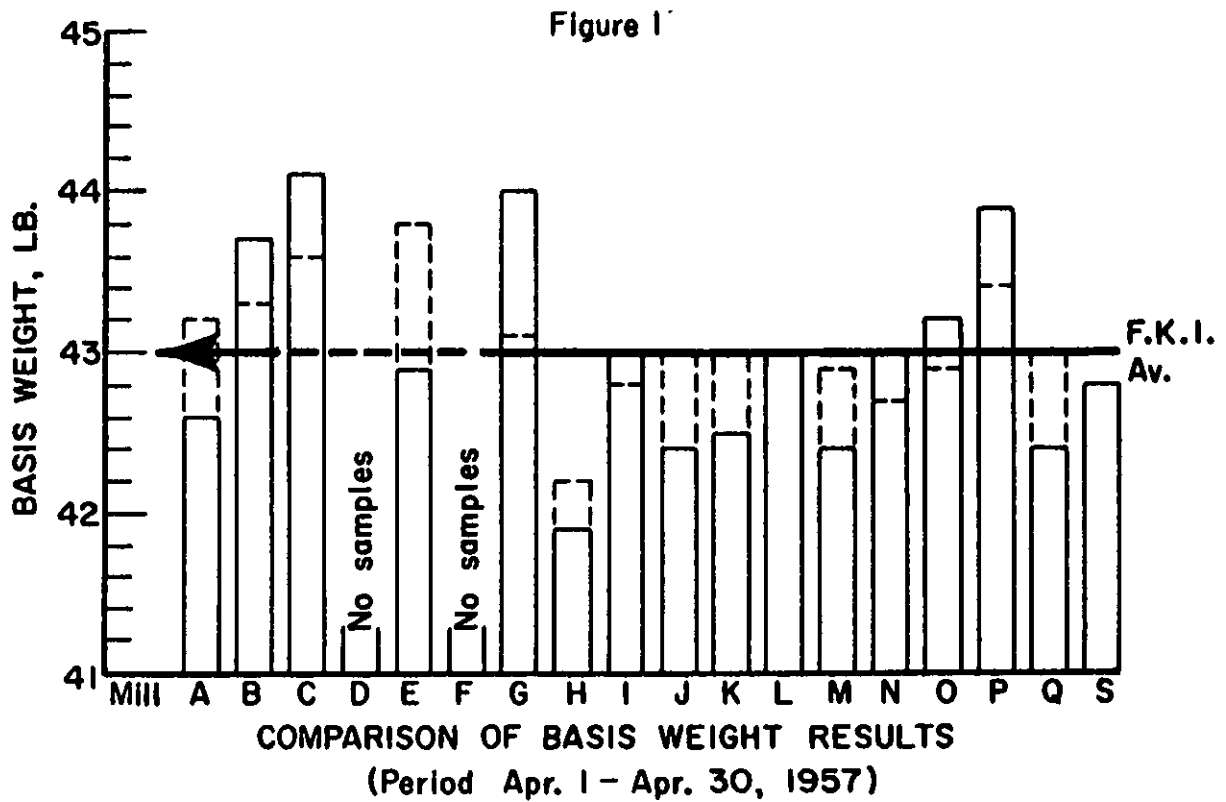
^b Drum linerboard

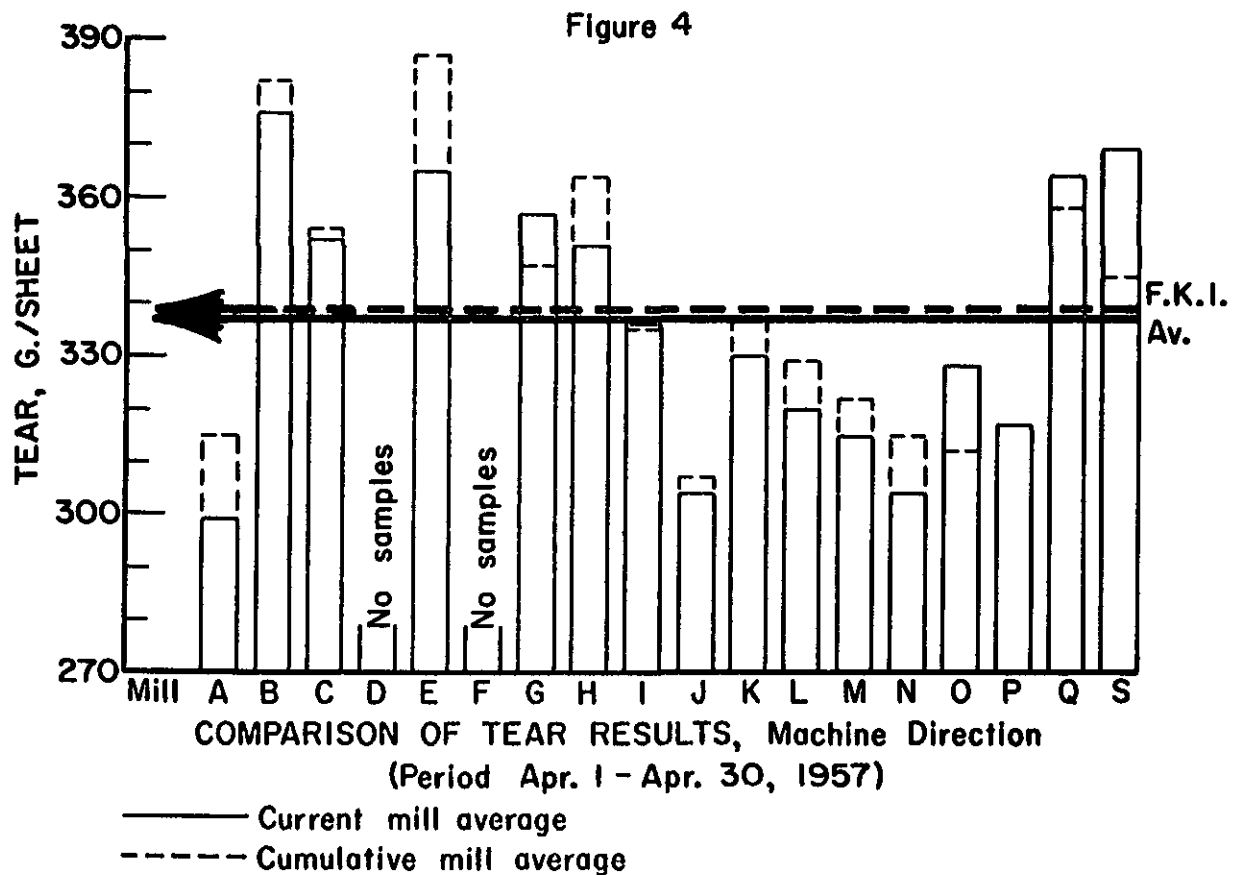
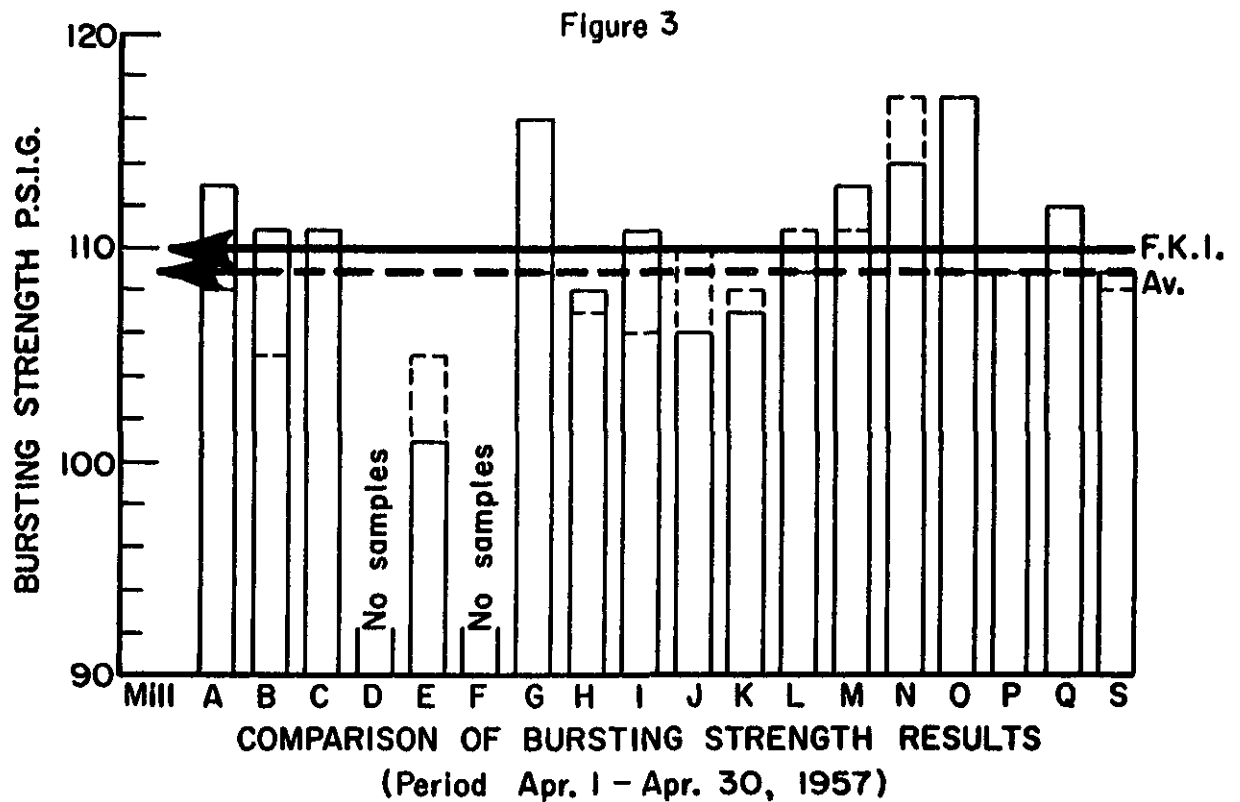
The results indicate that all participating mills are using
a water finish on their 42-lb. linerboard.

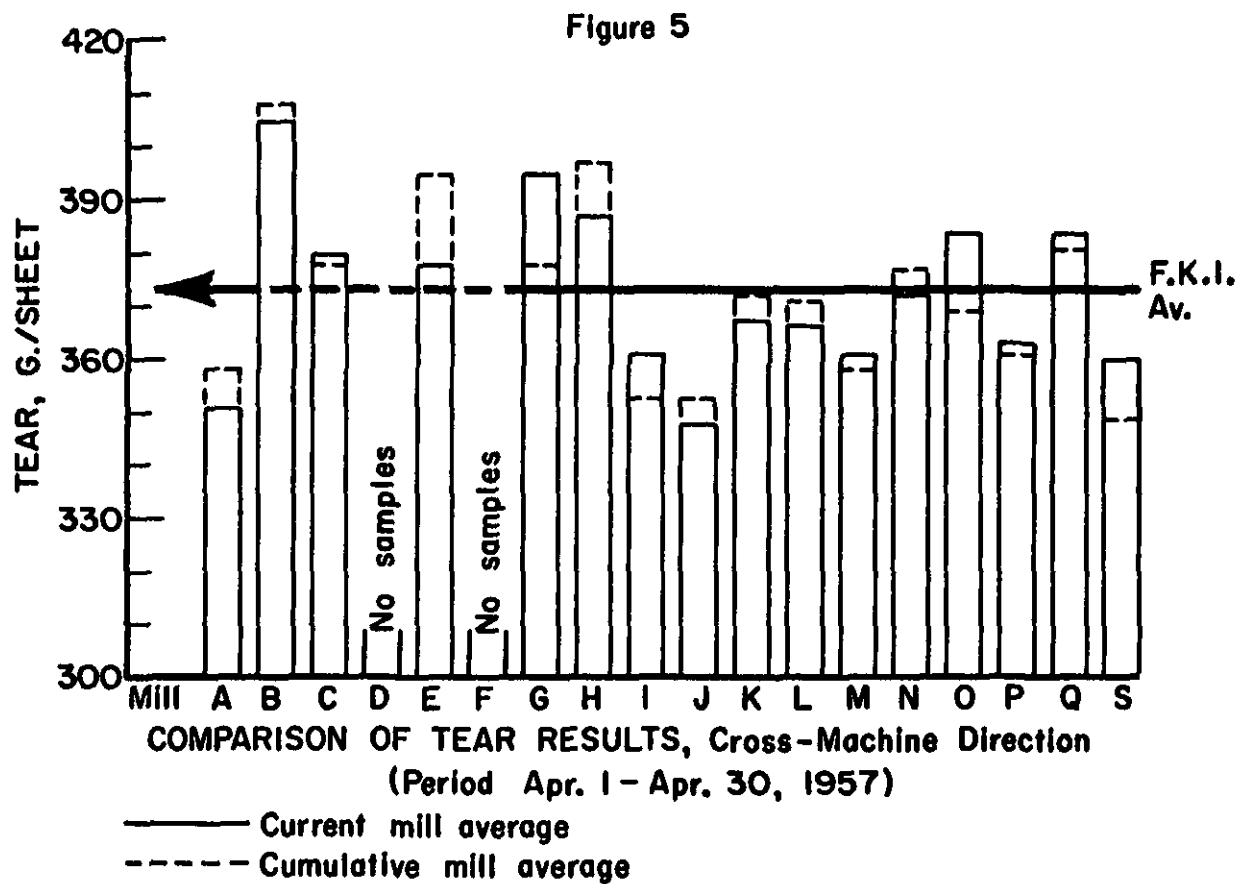
TABLE II

SUMMARY OF COMPOSITE MILL AVERAGES--APRIL 1 THROUGH APRIL 30, 1957

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	In Machine Tear, g./sheet Cross Machine	Elmendorf Tear, g./sheet Cross Machine
A	42.6	12.4	113	299	351
B	43.7	12.2	111	376	405
C	44.1	12.9	111	352	380
D	No samples submitted.				
E	42.9	12.9	101	365	378
F	No samples submitted.				
G	44.0	12.5	116	357	395
H	41.9	12.1	108	351	387
I	43.0	13.6	111	336	361
J	42.4	13.1	106	304	348
K	42.5	12.3	107	330	367
L	43.0	12.5	109	320	366
M	42.4	13.2	113	315	361
N	43.0	13.2	114	304	372
O	43.2	12.5	117	328	384
P	43.9	12.7	109	317	363
Q	42.4	13.0	112	364	384
S	42.8	12.2	109	369	360
Current FK1 Average:	43.0	12.7	110	337	373
Cumulative FK1 Average:	43.0	12.7	109	339	373
FK1 Index, %	100.0	100.0	100.9	99.4	100.0







SUMMARY OF INSTITUTE DATA---APRIL 1 THROUGH APRIL 30, 1957

TABLE III
MILL A -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight,		Caliper, points		Bursting Strength,		Klensdorf Tear,								
					lb.	Av.	Max.	Min.	Av.	g./sheet									
										Max.	Min.	Av.	Max.	Min.	Av.				
173890	WF1S	4/ 2/57	3/25/57	1	42.4	40.8	41.6	13.0	11.2							11.9	134	91	113
173891	WF1S	4/ 2/57	3/26/57	1	42.4	40.8	41.8	12.9	12.0	12.3	140	89	109	328	256	293	392	304	331 ^a
174144	WF1S	4/22/57	4/15/57	1	45.0	41.6	43.5	13.0	12.0	12.4	134	97	116	336	284	295 ^a	368	328	349 ^a
174145	WF1S	4/22/57	4/16/57	1	44.4	42.2	43.5	13.7	12.5	13.1	135	84	113	360	280	309	376	344	363 ^a
Current Mill Average:							42.6		12.4				113		299		351		
Cumulative Mill Average:							43.2		12.8				108		315		358		
Mill Factor, %							98.6		96.9				104.6		94.9		98.0		
Mill Index, %							99.1		97.6				103.7		88.2		94.1		

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE IV
MILL B -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i., gage		Klaendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
173875	W.B.	4/1/57	3/14/57	-	46.0	41.8	13.0	12.0	127	97	110	464
174092	W.B.	4/15/57	3/20/57	-	44.0	42.2	12.3	11.9	130	93	113	384
174093	W.B.	4/15/57	3/23/57	-	45.0	42.6	13.0	12.1	127	91	111	400
174094	W.B.	4/15/57	4/6/57	-	45.0	42.4	12.6	12.0	127	87	111	432
174146	W.B.	4/22/57	4/9/57	-	44.2	42.0	12.6	11.8	136	94	108	416
174147	W.B.	4/22/57	4/10/57	-	44.6	42.0	12.2	11.8	128	84	111	464
Current Mill Average:					43.7		12.2		111		376	
Cumulative Mill Average:					43.3		12.2		105		382	
Mill Factor, %					100.9		100.0		105.7		98.4	
Mill Index, %					101.6		96.1		101.8		110.9	
											405	
											408	
											99.3	
											108.6	

This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE V

MILL C -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight,			Caliper, points			Bursting Strength, P.S.I., Kgs			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
173886	W.F.	4/ 1/57	3/27/57	-	45.2	42.6	43.4	13.1	12.3	12.8	129	83	109	408	312	343 ^a
173887	W.F.	4/ 1/57	3/28/57	-	45.0	43.6	44.4	13.8	13.0	13.3	124	78	106	408	264	327 ^a
173888	W.F.	4/ 1/57	3/29/57	-	46.0	44.6	45.2	13.1	12.4	12.9	126	98	113	392	312	358 ^a
173996	W.F.	4/ 8/57	4/ 3/57	-	44.8	43.6	44.1	13.6	12.8	13.3	127	90	111	464	320	394 ^a
173997	W.F.	4/ 8/57	4/ 4/57	-	45.6	44.6	45.1	13.0	12.3	12.7	130	97	117	408	296	355 ^a
173998	W.F.	4/ 8/57	4/ 5/57	-	44.8	42.4	44.1	13.5	12.8	13.2	120	92	105	400	312	349 ^a
174125	W.F.	4/18/57	4/10/57	-	43.8	42.4	43.3	12.3	11.4	12.0	129	93	116	368	288	329 ^a
174126	W.F.	4/18/57	4/11/57	-	45.0	43.8	44.2	13.3	12.6	13.0	120	77	104	400	320	352 ^a
174127	W.F.	4/18/57	4/12/57	-	43.8	42.2	43.0	13.6	12.3	13.0	135	98	114	400	328	360 ^a
Current Mill Average:					44.1			12.9			111			352		
Cumulative Mill Average:					43.6			12.7			110			354		
Mill Factor, %					101.1			101.6			100.9			99.4		
Mill Index, %					102.6			101.6			101.8			103.8		

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE VI

MILL D -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, Points		Bursting Strength, P.S.I. Gage		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.

No samples submitted.

TABLE VII

MILL E -- 42-LB. LINERBOARD

174002	S.F.	4/ 8/57	3/25/57	7	45.6	42.6	44.0	13.2	12.5	12.9	126	75	103	432	280	361	416	336	396 ^a	
174003	S.F.	4/ 8/57	4/ 1/57	7	44.2	41.4	43.0	14.0	12.6	13.3	118	71	98	440	352	383 ^a	424	320	376 ^a	
174156	S.F.	4/22/57	4/13/57	7	42.0	41.2	41.8	14.0	12.0	12.4	120	82	103	384	320	349 ^a	432	320	363 ^a	
Current Mill Average:					42.9		12.9		12.9		101		101		365		378		378	
Cumulative Mill Average:					43.8		13.0		13.0		105		105		387		395		395	
Mill Factor, %					97.9		99.2		99.2		96.2		96.2		94.3		95.7		95.7	
Mill Index, %					99.8		101.6		101.6		92.7		92.7		107.7		101.3		101.3	

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE VIII

MILL F -- 42-1B. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, Points		Bursting Strength, P.S.I. gage		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.

No samples submitted.

TABLE IX

MILL G -- 42-1B. LINERBOARD

173879	W.F.	4/ 1/57	3/26/57	-	44.0	42.0	43.0	13.2	11.8	12.6	142	94	119	408	272	335 ^a	432	336	392 ^a
173880	W.F.	4/ 1/57	3/26/57	-	45.6	43.2	44.1	14.0	12.7	13.2	138	100	118	408	296	343 ^a	424	352	385 ^a
174063	W.F.	4/10/57	4/ 1/57	-	45.8	44.0	44.9	14.0	12.2	13.2	133	99	114	448	304	387 ^a	448	360	407 ^a
174064	W.F.	4/10/57	4/ 1/57	-	46.0	44.4	45.3	13.8	12.0	13.1	136	96	121	480	352	399	496	400	442 ^a
174150	W.F.	4/22/57	4/18/57	-	45.2	42.6	44.0	12.7	11.8	12.2	138	87	114	368	288	329 ^a	432	320	384 ^a
174151	W.F.	4/22/57	4/18/57	-	45.4	43.6	44.4	12.8	12.0	12.4	136	93	116	376	336	354 ^a	408	320	376 ^a
174152	W.F.	4/22/57	4/18/57	-	44.4	41.6	42.5	12.2	11.1	11.8	125	84	109	400	320	355 ^a	432	344	382 ^a
174153	W.F.	4/22/57	4/18/57	-	45.2	42.4	43.8	12.3	11.2	11.8	142	80	119	400	320	353 ^a	416	368	389 ^a
Current Mill Average:					44.0					12.5		116				357		395	
Cumulative Mill Average:					43.1					12.8		109				347		378	
Mill Factor, %						102.1				97.7		106.4				102.9		104.5	
Mill Index, %						102.3				98.4		106.4				105.3		105.9	

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XI

MILL I -- 42-LB. LINERBOARD

File No	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight,		Caliper,		Bursting Strength,		Elmendorf Tear,										
					lb.		points		p.s.i. Range		g./sheet		Across								
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.			Max.	Min.	Max.	Min.	Max.	Min.	Max.
174004	WFLS	4/ 8/57	3/29/57	2	44.6	42.2	43.4	14.3	13.4	13.8	127	97	109	368	272	331 ^a	376	312	343 ^a		
174005	WFLS	4/ 8/57	4/ 2/57	2	43.6	42.0	42.6	14.2	13.1	13.7	117	82	102	392	272	332 ^a	400	320	360 ^a		
174186	WFLS	4/25/57	4/19/57	2	44.0	41.8	43.0	13.8	13.0	13.2	141	93	122	368	304	345 ^a	416	352	381 ^a		
Current Mill Average:					43.0		13.6				111				336				361		
Cumulative Mill Average:					42.8		13.2				106				335				353		
Mill Factor, %					100.5		103.0				104.7				100.3				102.3		
Mill Index, %					100.0		107.1				101.8				99.1				96.8		

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XII
MILL J -- 42-LB. LINERBOARD

File No.	Finish	Date Recd	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet								
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.							
													Av.	Av.	Av.	Av.			
174095	W F.	4/15/57	3/14/57	1	43.8	40.0	42.1	13.8	12.8	13.1	120	86	104	336	272	299	368	304	341 ^a
174096	W F	4/15/57	3/29/57	1	43.8	42.0	42.6	14.0	12.8	13.1	119	92	105	336	264	305	384	336	353 ^a
174115	W.F.	4/16/57	4/ 2/57	1	43.2	41.4	42.4	13.8	12.6	13.0	119	95	108	368	248	302 ^a	384	328	345 ^a
174116	W.F.	4/16/57	4/ 5/57	1	43.2	41.2	42.5	14.0	12.5	13.2	130	86	106	352	272	311 ^a	384	312	352 ^a
Current Mill Average:							42.4		13.1		106		106		304		348		
Cumulative Mill Average:							43.0		12.9		110		110		307		353		
Mill Factor, %							98.6		101.6		96.4		96.4		99.0		98.6		
Mill Index, %							98.6		103.1		97.2		97.2		89.7		93.3		

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XIII

MILL R -- 42-LB. LINERBOARD

File	No	Finish	Date	Recd.	Date	Mch.	No.	Max.	Min.	Av.	Basis Weight,	Caliper,	points	Max.	Min.	Av.	Bursting	Strength,	P.S.I., Range	Max.	Min.	Av.	Flimendorff Tear,	In	Max.	Min.	Av.	g./sheet	Across	Max.	Min.	Av.
173892	W.F.	4/2/57	4/2/57	3/26/57	43.6	42.0	42.6	12.9	12.2	12.5	132	84	110	416	272	330	432	336	379 ^a													
173893	W.F.	4/2/57	4/2/57	3/27/57	44.0	42.4	43.3	13.0	12.3	12.6	112	73	97	368	288	332	408	304	362 ^a													
174000	W.F.	4/8/57	4/8/57	4/1/57	42.4	41.8	42.1	12.4	11.7	12.1	132	84	114	368	280	325 ^a	368	304	349 ^a													
174001	W.F.	4/8/57	4/8/57	4/2/57	44.0	42.0	43.3	12.5	11.4	11.9	141	97	116	400	304	348	416	352	384 ^a													
174119	W.F.	4/16/57	4/16/57	4/7/57	43.0	41.6	42.1	12.9	12.2	12.5	127	80	100	384	272	329 ^a	416	344	365 ^a													
174120	W.F.	4/16/57	4/16/57	4/7/57	42.6	40.2	41.7	12.3	11.8	12.1	127	90	106	360	280	318 ^a	432	328	365 ^a													
Current Mill Average:																																
Cumulative Mill Average:																																
Mill Factor, %																																
Mill Index, %																																

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XIV

MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, P.S.I., gage		Elmendorf Tear, g./sheet		Across	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
173878	W.F.	4/ 1/57	3/18/57	2	44.2	41.6	12.7	11.5	12.1	133	82	105	376	248
173942	W.F.	4/ 3/57	3/20/57	2	44.2	42.4	13.2	12.4	12.8	137	87	109	368	272
173943	W.F.	4/ 3/57	3/20/57	2	44.0	42.0	13.5	11.9	12.8	136	89	112	384	272
173948	W.F.	4/ 4/57	3/23/57	2	45.0	43.4	13.0	12.1	12.5	127	92	109	384	272
173949	W.F.	4/ 4/57	3/23/57	2	44.6	43.0	12.9	12.1	12.5	131	83	111	376	240
174048	W.F.	4/ 9/57	3/26/57	2	44.2	42.0	12.6	11.6	12.2	124	81	110	400	272
174049	W.F.	4/ 9/57	4/ 2/57	2	44.0	41.8	12.9	11.8	12.3	141	74	111	344	272
174050	W.F.	4/ 9/57	4/ 2/57	2	44.0	42.0	12.7	11.7	12.2	142	82	110	432	264
174193	W.F.	4/26/57	4/20/57	2	43.0	41.6	13.1	12.2	12.7	132	83	109	400	264
174194	W.F.	4/26/57	4/20/57	2	42.8	41.6	13.1	12.3	12.8	124	77	107	384	288
Current Mill Average.					43.0		12.5		109		320		366	
Cumulative Mill Average:					43.0		12.5		111		329		371	
Mill Factor, %					100.0		100.0		98.2		97.3		98.7	
Mill Index, %					100.0		98.4		100.0		94.4		98.1	

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XV
MILL M -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, P.S.I., Page			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
173999	WF1S	4/8/57	3/27/57	-	43.6	42.0	42.8	14.6	13.1	13.8	136	78	106	376	256	306
174142	WF1S	4/22/57	4/15/57	1	42.2	40.8	41.7	13.9	12.0	12.8	133	97	114	440	280	324
174143	WF1S	4/22/57	4/15/57	1	42.2	40.4	41.7	13.1	12.2	12.7	138	91	113	352	272	313
174181	WF1S	4/25/57	4/14/57	1	44.0	42.4	43.1	13.7	12.8	13.1	137	90	115	352	272	314 ^a
174182	WF1S	4/25/57	4/14/57	1	43.2	42.0	42.8	14.0	12.8	13.4	137	77	115	400	272	319 ^a
Current Mill Average:					42.4			13.2			113			315		
Cumulative Mill Average:					42.9			13.1			111			322		
Mill Factor, %					98.8			100.8			101.8			97.8		
Mill Index, %					98.6			103.9			103.7			92.9		

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XVI
MILL N -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, P.S.I.		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	In	Across
174104	W.F.	4/15/57	3/2/57	1	43.6	42.2	13.8	12.2	145	100	352	315 ^a
174105	W.F.	4/15/57	3/6/57	1	44.8	43.4	14.0	12.3	145	98	368	320 ^a
174106	W.F.	4/15/57	3/11/57	1	44.2	42.2	14.0	12.4	128	87	344	289
174107	W.F.	4/15/57	3/15/57	1	42.2	41.4	13.8	12.9	135	91	336	290 ^a
Current Mill Average:					43.0		13.2		114		304	372
Cumulative Mill Average:					42.7		13.2		117		315	377
Mill Factor, %					100.7		100.0		97.4		96.5	98.7
Mill Index, %					100.0		103.9		104.6		89.7	99.7

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XVII
MILL 0 -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
173876	WFLS	4/ 1/57	3/27/57	1	43.8	42.4	12.9	12.0	136	102	392	272
173877	WFLS	4/ 1/57	3/28/57	1	43.6	42.4	12.8	11.9	149	96	400	256
174101	WFLS	4/15/57	4/ 5/57	1	44.2	43.4	13.0	12.6	137	103	392	288
Current Mill Average:					43.2		12.5		117		328	
Cumulative Mill Average:					42.9		12.3		109		312	
Mill Factor, %					100.7		101.6		107.3		105.1	
Mill Index, %					100.5		98.4		107.3		96.8	
											384	
											369	
											104.1	
											102.9	

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XVIII

MILL P -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, Points		Bursting Strength, P.S.I. Range		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
173940	W.F.	4/ 3/57	3/26/57	1	44.2	43.0	13.3	12.7	115	88	360	280
173941	W.F.	4/ 3/57	3/26/57	1	44.4	42.4	13.0	12.6	129	92	384	264
173994	W.F.	4/ 8/57	3/31/57	2	44.2	43.4	13.3	12.6	126	83	408	296
173995	W.F.	4/ 8/57	4/ 1/57	2	44.2	43.2	13.3	12.6	123	89	336	280
174108	W.F.	4/15/57	4/ 7/57	1	45.4	44.0	13.3	12.3	130	93	360	280
174109	W.F.	4/15/57	4/ 7/57	1	45.2	44.0	13.2	12.1	131	93	384	288
174173	W.F.	4/24/57	4/14/57	2	44.0	42.2	12.9	11.4	138	84	368	240
174174	W.F.	4/24/57	4/15/57	2	44.0	42.2	13.3	12.1	128	90	368	232
Current Mill Average:					43.9		12.7		109		317	
Cumulative Mill Average:					43.4		12.5		109		317	
Mill Factor, %					101.2		101.6		100.0		100.0	
Mill Index, %					102.1		100.0		100.0		93.5	
											363	
											361	
											100.6	
											97.3	

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XIX
MILL Q -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight,		Caliper,		Bursting Strength,		Elmendorf Tear,								
					lb.		points		P.s.i., Page		g./sheet		Across						
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.			
174117	W.	4/16/57	3/29/57	4	44.4	41.0	42.5	13.3	12.6	13.0	135	102	113	432	336	379 ^a	400	352	380
174118	W.	4/16/57	4/1/57	2	43.8	41.2	42.4	13.6	12.6	13.0	133	85	112	400	304	353 ^a	416	344	371 ^a
174154	W.	4/22/57	4/2/57	2	42.4	41.2	41.9	12.9	12.2	12.5	131	100	114	408	320	348 ^a	432	360	395 ^a
174155	W.	4/22/57	4/11/57	4	44.0	42.2	42.9	13.9	13.0	13.4	125	93	110	432	352	378 ^a	432	352	392 ^a
Current Mill Average:							42.4			13.0			112			364			384
Cumulative Mill Average:							43.0			13.2			109			358			381
Mill Factor, %							98.6			98.5			102.8			101.7			100.8
Mill Index, %							98.6			102.4			102.8			107.4			102.9

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XI

MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	In	Across
173882	W.F.	4/ 1/57	3/23/57	-	42.8	40.0	13.0	11.8	127	88	392	352
173883	W.F.	4/ 1/57	3/23/57	-	42.6	41.6	13.0	11.8	127	86	400	352
174006	W.F.	4/ 8/57	3/31/57	-	44.2	42.0	13.0	11.7	137	94	448	400
174007	W.F.	4/ 8/57	3/31/57	-	44.6	42.0	13.2	12.0	130	95	424	416
174110	W.F.	4/15/57	4/ 9/57	-	44.0	42.4	12.8	11.6	124	88	464	432
174111	W.F.	4/15/57	4/ 9/57	-	44.0	42.4	12.8	11.5	130	94	432	416
Current Mill Average:					42.8		12.2		109		369	
Cumulative Mill Average:					42.8		12.5		108		345	
Mill Factor, %					100.0		97.6		100.9		107.0	
Mill Index, %					99.5		96.1		100.0		108.8	

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XXI
MILL R -- MISCELLANEOUS

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight,			Caliper,			Bursting Strength,			Elmendorf Tear,										
					lb.			points			p.s.i. gage			g./sheet										
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.								
<u>47-lb., Drum Linerboard</u>																								
173884	WF2S	4/ 1/57	3/20/57	2	48.4	46.0	47.1	13.9	13.0	13.5	114	85	99	384	280	341 ^a	408	304	360 ^a					
173885	WF2S	4/ 1/57	3/21/57	2	47.6	46.2	46.9	14.6	13.6	14.0	109	84	97	384	304	352 ^a	432	320	377 ^a					
174103	WF2S	4/15/57	4/10/57	2	50.0	47.6	48.4	14.1	13.4	13.7	108	82	98	432	344	390	496	384	430 ^a					
Current Mill Average:																								
Cumulative Mill Average:																								
Mill Factor, %																								
							100.2			96.5		103.2				93.5			101.0					
<u>38-lb., Linerboard</u>																								
174102	WF1S	4/15/57	4/ 8/57	2	40.0	37.8	38.6	12.0	11.0	11.6	115	93	103	336	256	292	352	304	325 ^a					
<u>69-lb., Linerboard</u>																								
174185	WF2S	4/25/57	4/18/57	2	70.0	68.0	68.7	19.7	18.0	18.7	173	133	152	640	480	567	688	592	630 ^a					

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

As a supplementary part of the Continuous Baseline Study, comparisons of the mill test results with those obtained at The Institute of Paper Chemistry on corresponding samples have been included in this report. As may be noted in Table XXII, the atmospheric conditions used prior to and during the testing period were relatively uniform for the mills which reported this information. However, the conditioning periods varied considerably.

TABLE XXII

Code	Preconditioning			Conditioning		
	R.H., %	Temp., °F.	Time, hr.	R.H., %	Temp., °F.	Time, hr.
A	40-54	78-82	24-26	39-54	76-82	2
B		None		45-53	70-72	48
C	36-39	76-78	8	51-52	72-73	16
D		No samples submitted.				
E	50	73	24		None	
F		No samples submitted.				
G		None		50	73	24-72
H	50	73	24	49-50	72-73	24
I	50-52	70-72	24		None	
J	48-60	57-72	0.5	50	70	24-72
K		None		50	73	24
L	50	73	24	50	73	24
M		None		41-56	85-96	—
N		None		50-60	78-80	—
O		None		47-48	68-69	—
P		None		50	73	24
Q		None		52	72-73	—
S		None		50	73	0.5

A summary of the Institute and mill test results for the current period is shown in Table XXIII, and a comparison of differences between Institute and mill test results is given in Table XXIV for the current period and the two previous periods. The comparisons are given in Tables XXV to

to XLII, for the 42-lb. liner samples. A comparison of the special drum and miscellaneous stock is given in Table XLIII. In all the comparisons given in Tables XXV to XLIII, the Institute's test values have been used as the reference line.

A comparison of the test data in Tables XXIII and XXIV reveals the level of agreement between mill and Institute data for basis weight, caliper, bursting strength, and Elmendorf tear. Table XXIII shows the average difference between Institute and mill test results for all sample lots submitted by each mill for the current period. In addition, the maximum difference encountered in comparing the Institute and mill test results for a given sample lot is shown. In Table XXIV, the average differences shown for each test in Table XXIII have been calculated on a percentage basis for each mill. In addition, for purposes of comparison, the average percentage differences for the preceding two periods are shown.

It may be noted in Table XXIV that the maximum variation between the average basis weight results of the Institute and those of a given mill on corresponding samples is two per cent for the current period. By comparison, the maximum percentage variation noted for the previous two periods was three per cent. Further, it may be noted that the average basis weight results for Mills G, I, J, K, and L are higher than those for the Institute, and the average results for the other mills are lower. None of the variations for the current period appear to be excessive.

The maximum variation in caliper for the current period is six per cent. This variation is the same as the maximum variation for the previous

two periods. Compared with the Institute's test results, the test results for all mills are lower. Only the variations for Mills A and M appear to be excessive.

It may be noted in Table XXIV that the bursting strength results exhibited a maximum variation of eleven per cent for the current period. The average results for Mills E, K, P, Q, and S are higher than those for the Institute, the average results for Mills B and L are the same, and the results for the other mills are lower. Only the variation associated with the result for Mill Q appears to be excessive.

It may be seen in Tables XXIII and XXIV that the average machine direction tear results for Mills H, I, J, K, L, and P are higher than those for the Institute, and the results for the other mills are lower. The maximum variation for the current period is sixteen per cent. The variations which exceed a magnitude of ten per cent may be excessive. Mills in this category include A, H, and N.

With regard to the cross-machine direction tear results, it may be noted that the average results for Mills C, E, H, I, J, K, O, and P are higher than those for the Institute, and the average results for the other mills are lower. The maximum variation for the current period is twenty-three per cent. The variations noted for Mills H, I, and K exceed ten per cent and appear to be excessive.

TABLE XIII
SUMMARY OF TEST RESULT COMPARISONS (AVERAGE MILL AND INSTITUTE RESULTS)

Mills *	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S
No. Samples Compared	4	6	9	0	3	0	8	8	3	4	6	10	5	4	3	8	4	6
Institute	42.6	43.7	44.1	--	42.9	--	44.0	41.9	43.0	42.4	42.5	43.0	42.4	43.0	43.2	43.9	42.4	42.8
Mill	42.1	43.2	43.4	--	42.6	--	44.1	41.7	44.0	42.9	42.7	43.1	41.9	42.0	42.4	42.9	42.3	42.4
Av. Diff.**	-0.5	-0.5	-0.7	--	-0.3	--	+0.1	-0.2	+1.0	+0.5	+0.2	+0.1	-0.5	-1.0	-0.8	-1.0	-0.1	-0.4
Max. Diff.***	-0.7	-0.6	-1.8	--	-0.5	--	+0.5	-0.5	+1.6	+0.9	+0.8	+0.7	-0.8	-1.2	-1.4	-1.2	-0.3	-0.8
Caliber																		
Institute	12.4	12.2	12.9	--	12.9	--	12.5	12.1	13.6	13.1	12.3	12.5	13.2	13.2	12.5	12.7	13.9	12.2
Mill	11.8	11.9	12.7	--	12.5	--	12.0	11.7	13.1	13.0	11.9	12.2	12.4	13.0	12.1	12.3	12.5	11.8
Av. Diff.**	-0.6	-0.3	-0.2	--	-0.4	--	-0.5	-0.4	-0.5	-0.1	-0.4	-0.3	-0.8	-0.2	-0.4	-0.4	-0.5	-0.4
Max. Diff.***	-0.7	-0.5	-0.5	--	-0.6	--	-0.9	-0.6	-0.7	-0.1	-0.7	-0.6	-0.9	-0.4	-0.6	-0.7	-0.8	-0.7
Bursting Strength																		
Institute	113	111	111	--	101	--	116	108	111	106	107	109	113	114	117	109	112	109
Mill	112	111	109	--	106	--	112	106	108	105	108	109	110	110	112	113	124	110
Av. Diff.**	-1	0	-2	--	+5	--	-4	-2	-3	-1	+1	0	-3	-4	-5	+4	+12	+1
Max. Diff.***	-4	+3	-5	--	+7	--	-11	-7	-10	-2	+8	+2	-4	-7	-6	+7	+16	+5
Tearing Strength, In																		
Institute	299	376	352	--	365	--	357	351	336	304	330	320	315	304	328	317	364	369
Mill	250	337	342	--	350	--	345	390	369	310	345	324	292	259	322	326	357	331
Av. Diff.**	-49	-39	-10	--	-15	--	-12	+39	+33	+6	+15	+4	-23	-45	-6	+9	-7	-38
Max. Diff.***	-51	-58	-45	--	-17	--	-54	+62	+58	+17	+20	-27	-59	-55	-24	+36	-22	-72
Tearing Strength, Across																		
Institute	351	405	380	--	378	--	395	387	361	348	367	366	361	372	384	363	384	360
Mill	322	382	387	--	395	--	385	477	417	364	411	365	338	348	394	381	374	345
Av. Diff.**	-29	-23	+7	--	+17	--	-10	+90	+56	+16	+44	-1	-23	-24	+10	+18	-10	-15
Max. Diff.***	-45	-43	+28	--	+40	--	-41	+124	+57	+26	+55	+21	-37	-42	+27	+27	-36	-43

* Comparison based on averages involved only those samples on which mill test data were submitted.

** Average difference is the difference between the Institute mill average and the mill average based on mill test data.

*** Maximum difference encountered in comparing the Institute average and the mill average for any sample submitted by that particular mill.

TABLE XXIV
COMPARISON OF INSTITUTE-MILL DIFFERENCES BY PERIODS
Average Differences, per cent

Mill	Period	Basis Weight	Caliper	Bursting Strength	Tearing Strength, In	Across
A	Current	-1	-5	-0.9	-16	-8
	117th	-1	-5	+4	-26	-5
	116th	-0.7	-6	+3	+9	+15
B	Current	-1	-2	0	-10	-6
	117th	-0.7	-3	-3	-9	-5
	116th	-1	-2	-3	-2	+3
C	Current	-2	-2	-2	-3	+2
	117th	+0.7	-3	-0.9	-6	-3
	116th	+0.2	-3	0	-6	-1
D	Current	--	--	--	--	--
	117th	--	--	--	--	--
	116th	--	--	--	--	--
E	Current	-0.7	-3	+5	-4	+4
	117th	-0.7	-5	+6	-11	0
	116th	-1	-4	+4	-8	+4
F	Current	--	--	--	--	--
	117th	--	--	--	--	--
	116th	--	--	--	--	--
G	Current	+0.2	-4	-3	-3	-3
	117th	0	-4	-7	-8	-4
	116th	-0.7	-5	-5	-8	-3
H	Current	-0.5	-3	-2	+11	+23
	117th	+1	-3	-0.9	+9	+22
	116th	+0.7	-4	-5	+5	+23
I	Current	+2	-4	-3	+10	+16
	117th	+3	-4	-8	+7	+9
	116th	+2	-2	+2	+2	+8
J	Current	+1	-0.8	-0.9	+2	+5
	117th	+2	-0.8	-2	+2	+4
	116th	0	0	-2	+6	+6
K	Current	+0.5	-3	+0.9	+5	+12
	117th	+0.2	-4	+0.9	0	+9
	116th	+0.2	-3	+4	+9	+13
L	Current	+0.2	-2	0	+1	-0.3
	117th	-0.2	-3	-2	-2	-1
	116th	+1	-2	-0.9	-2	-0.3
M	Current	-1	-6	-3	-7	-6
	117th	-0.9	-4	+0.9	0	-4
	116th	-0.2	-4	-3	-1	+2
N	Current	-2	-2	-4	-15	-6
	117th	-1	-3	-3	-13	-4
	116th	-2	-4	-4	-9	-0.8
O	Current	-2	-3	-4	-2	+3
	117th	+0.5	-2	+0.9	+5	+5
	116th	-2	-2	+0.9	+4	+6
P	Current	-2	-3	+4	+3	+5
	117th	-1	-3	+2	+5	+3
	116th	-2	-4	+6	+2	+5
Q	Current	-0.2	-4	+11	-2	-3
	117th	0	-3	+5	+0.3	-5
	116th	-0.2	-2	+2	-2	-0.3
S	Current	-0.9	-3	+0.9	-10	-4
	117th	-0.7	-3	+0.9	-0.6	+9
	116th	-0.5	-3	+4	-1	+8

COMPARISON OF INSTITUTE AND MILL DATA--APRIL 1 THROUGH APRIL 30, 1957

TABLE XXV

MILL A -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i.		In		g./sheet		Across	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.
173890	WFLS	3/25/57	1	41.6	-0.6	11.9	11.2	-0.7	113	115	+2	299	249	360 ^a	315
173891	WFLS	3/26/57	1	41.8	-0.5	12.3	11.6	-0.7	109	107	-2	293	242	331 ^a	304
174144	WFLS	4/15/57	1	43.5	-0.7	12.4	11.9	-0.5	116	112	-4	295 ^a	250	349 ^a	324
174145	WFLS	4/16/57	1	43.5	-0.3	13.1	12.4	-0.7	113	113	0	309	258	363 ^a	344
Current Mill Average:				42.6	-0.5	12.4	11.8	-0.6	113	112	-1	299	250	351	322

TABLE XXVI

MILL B -- 42-LB. LINERBOARD

173875	W.B.	3/14/57	-	44.3	-0.6	12.6	12.1	-0.5	110	110	0	402 ^a	352	421 ^a	421	0
174092	W.B.	3/20/57	-	43.1	-0.3	12.1	11.8	-0.3	113	110	-3	356 ^a	319	399 ^a	392	-7
174093	W.B.	3/23/57	-	44.2	-0.4	12.5	12.3	-0.2	111	112	+1	365 ^a	345	420 ^a	393	-27
174094	W.B.	4/6/57	-	43.6	-0.5	12.2	11.8	-0.4	111	114	+3	367 ^a	339	401 ^a	373	-28
174146	W.B.	4/9/57	-	43.1	-0.3	12.2	11.8	-0.4	108	110	+2	357 ^a	316	389 ^a	355	-34
174147	W.B.	4/10/57	-	43.7	-0.4	11.9	11.4	-0.5	111	113	+2	407 ^a	349	398 ^a	355	-43
Current Mill Average:				43.7	-0.5	12.2	11.9	-0.3	111	111	0	376	337	405	382	-23

This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XXVII

MILL C -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, Points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across
173886	W.F.	3/27/57	-	43.4	+0.1	12.8	12.5 -0.3	109	110 +1	343 ^a	338
173887	W.F.	3/28/57	-	44.4	-0.4	13.3	13.2 -0.1	106	109 +3	327 ^a	333
173888	W.F.	3/29/57	-	45.2	-1.0	12.9	12.7 -0.2	113	112 -1	358 ^a	345
173996	W.F.	4/ 3/57	-	44.1	-1.8	13.3	13.1 -0.2	111	108 -3	394 ^a	349
173997	W.F.	4/ 4/57	-	45.1	-1.7	12.7	12.5 -0.2	117	113 -4	355 ^a	348
173998	W.F.	4/ 5/57	-	44.1	-1.7	13.2	13.0 -0.2	105	104 -1	349 ^a	345
174125	W.F.	4/10/57	-	43.3	-0.2	12.0	11.9 -0.1	116	114 -2	329 ^a	324
174126	W.F.	4/11/57	-	44.2	+0.5	13.0	12.8 -0.2	104	106 +2	352 ^a	344
174127	W.F.	4/12/57	-	43.0	+0.4	13.0	12.5 -0.5	114	109 -5	360 ^a	353
Current Mill Average:				44.1	-0.7	12.9	12.7 -0.2	111	109 -2	352	342
										IPC	Mill Diff.
										380	-10
										387	+7

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note. All "current mill average" data are calculated from the totals of the individual readings.

COMPARISONS OF INSTITUTE AND MILL DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XXVIII

MILL D -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, P.S.I. gage		Elmendorf Tear, g./sheet	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across

No Samples Submitted

TABLE XXIX

MILL E -- 42-LB. LINERBOARD

174002	S.F.	3/25/57	7	44.0	43.5	-0.5	12.9	12.3	-0.6	103	110	+ 7	361	344	-17	396 ^a	389	- 7
174003	S.F.	4/ 1/57	7	43.0	42.8	-0.2	13.3	13.0	-0.3	98	102	+ 4	383 ^a	372	-11	376 ^a	416	+40
174156	S.F.	4/13/57	7	41.8	41.4	-0.4	12.4	12.1	-0.3	103	106	+ 3	349 ^a	334	-15	363 ^a	379	+16
Current Mill Average:				42.9	42.6	-0.3	12.9	12.5	-0.4	101	106	+ 5	365	350	-15	378	395	+17

TABLE XXX

MILL F -- 42-LB. LINERBOARD

No Samples Submitted

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XXXI

MILL G -- 42-18. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, Points		Bursting Strength, P.S.I., gage		Elmendorf Tear, g./sheet	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across
173879	W.F.	3/26/57	-	43.0	43.0 0.0	12.6	12.2 -0.4	119	112 - 7	335 ^a	347
173880	W.F.	3/26/57	-	44.1	44.3 +0.2	13.2	12.5 -0.7	118	114 - 4	343 ^a	305
174063	W.F.	4/ 1/57	-	44.9	44.5 -0.4	13.2	12.3 -0.9	114	114 0	387 ^a	333
174064	W.F.	4/ 1/57	-	45.3	45.8 +0.5	13.1	12.8 -0.3	121	113 - 8	399	369
174150	W.F.	4/18/57	-	44.0	44.2 +0.2	12.2	11.7 -0.5	114	110 - 4	329 ^a	357
174151	W.F.	4/18/57	-	44.4	44.7 +0.3	12.4	11.9 -0.5	116	114 - 2	354 ^a	361
174152	W.F.	4/18/57	-	42.5	42.7 +0.2	11.8	11.2 -0.6	109	107 - 2	355 ^a	347
174153	W.F.	4/18/57	-	43.8	43.7 -0.1	11.8	11.2 -0.6	119	108 -11	353 ^a	344
Current Mill Average:				44.0	44.1 +0.1	12.5	12.0 -0.5	116	112 - 4	357	345
										IPC	Diff.
										395	-12
										385	-10

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISONS OF INSTITUTE AND MILL DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XXXII

MILL H -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i., gage		Elmendorf Tear, g./sheet	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across
173881	WFLS	3/25/57	1	42.0	42.0 0.0	12.0	11.6 -0.4	108	107 -1	356 ^a	386
173889	WFLS	3/24/57	1	41.6	41.3 -0.3	11.9	11.5 -0.4	110	110 0	342	382
174097	WFLS	4/ 4/57	1	41.4	41.4 0.0	11.7	11.2 -0.5	110	111 +1	324 ^a	359
174098	WFLS	4/ 4/57	1	42.7	42.6 -0.1	12.3	11.7 -0.6	106	105 -1	353 ^a	399
174148	WFLS	4/12/57	1	42.0	41.5 -0.5	12.4	11.9 -0.5	103	99 -4	349	403
174149	WFLS	4/13/57	1	42.1	42.2 +0.1	12.2	11.8 -0.4	110	110 0	355 ^a	417
174183	WFLS	4/19/57	1	41.8	41.4 -0.4	12.3	11.7 -0.6	111	104 -7	358	386
174184	WFLS	4/20/57	1	41.6	41.5 -0.1	12.3	12.1 -0.2	106	106 0	369	392
Current Mill Average:				41.9	41.7 -0.2	12.1	11.7 -0.4	108	106 -2	351	390
										387	477
										+39	+90

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISONS OF INSTITUTE AND MILL DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XXXIII

MILL I -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight,		Caliper,		Bursting Strength,		Elmendorf Tear,	
				lb.	Diff.	points	Diff.	IPC	Mill Diff.	IPC	Mill Diff.
174004	W.F.	3/29/57	2	43.4	+0.8	13.8	-0.2	109	108	331 ^a	362
174005	W.F.	4/2/57	2	42.6	+1.6	13.7	-0.7	102	104	332 ^a	390
174186	W.F.	4/19/57	2	43.0	+0.5	13.2	-0.4	122	112	345 ^a	354
Current Mill Average.				43.0	+1.0	13.6	-0.5	111	108	336	369

TABLE XXXIV

MILL J -- 42-LB. LINERBOARD

174095	W.F.	3/14/57	1	42.1	+0.4	13.1	-0.1	104	105	299	305	341 ^a	367	+26
174096	W.F.	3/29/57	1	42.6	+0.9	13.1	-0.1	105	105	305	314	353 ^a	361	+8
174115	W.F.	4/2/57	1	42.4	+0.4	13.0	-0.1	108	106	302 ^a	319	345 ^a	368	+23
174116	W.F.	4/5/57	1	42.5	+0.4	13.2	-0.1	106	104	311 ^a	303	352 ^a	358	+6
Current Mill Average.				42.4	+0.5	13.1	-0.1	106	105	304	310	348	364	+16

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XXV

MILL K -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage				Elmendorf Tear, g./sheet						
				IPC	Mill Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	In		Across				
												IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	
173892	W.F.	3/26/57	2	42.6	42.7	+0.1	12.5	11.8	-0.7	110	108	- 2	330	350	+20	379a	420	+41
173893	W.F.	3/27/57	2	43.3	42.9	-0.4	12.6	12.0	-0.6	97	105	+ 8	332	345	+13	362a	397	+35
174000	W.F.	4/ 1/57	2	42.1	42.1	0.0	12.1	11.9	-0.2	114	111	- 3	325a	338	+13	349a	399	+50
174001	W.F.	4/ 2/57	2	43.3	43.8	+0.5	11.9	11.8	-0.1	116	114	- 2	348	360	+12	384a	436	+52
174119	W.F.	4/ 7/57	2	42.1	41.9	-0.2	12.5	12.1	-0.4	100	107	+ 7	329a	349	+20	365a	420	+55
174120	W.F.	4/ 7/57	2	41.7	42.5	+0.8	12.1	11.9	-0.2	106	107	+ 1	318a	330	+12	365a	396	+31
Current Mill Average:				42.5	42.7	+0.2	12.3	11.9	-0.4	107	108	+ 1	330	345	+15	367	411	+44

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISONS OF INSTITUTE AND MILL DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XXXVI

MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, P.S.I. gage		Elmendorf Tear, g./sheet	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.
173878	W.F.	3/18/57	2	43.1	+0.4	12.1	+0.1	105	+1	309	+22
173942	W.F.	3/20/57	2	43.2	-0.5	12.8	-0.4	109	+1	334 ^a	-27
173943	W.F.	3/20/57	2	43.1	-0.5	12.8	-0.5	112	-2	318 ^a	+11
173948	W.F.	3/23/57	2	44.0	-0.3	12.5	-0.3	109	-1	323 ^a	-18
173949	W.F.	3/23/57	2	43.8	0.0	12.5	-0.3	111	-2	312 ^a	0
174048	W.F.	3/26/57	2	43.0	0.0	12.2	-0.2	110	-1	302 ^a	+2
174049	W.F.	4/ 2/57	2	42.4	+0.2	12.3	-0.4	111	0	315 ^a	+19
174050	W.F.	4/ 2/57	2	42.7	0.0	12.2	-0.3	110	0	325 ^a	-5
174193	W.F.	4/20/57	2	42.4	+0.7	12.7	-0.4	109	-1	331	+26
174194	W.F.	4/20/57	2	42.3	+0.7	12.8	-0.6	107	+2	328 ^a	+10
Current Mill Average.				43.0	+0.1	12.5	-0.3	109	0	320	+4
										366	
										379	+21
										350 ^a	+17
										361 ^a	0
										361 ^a	-4
										371 ^a	-10
										355	-9
										372 ^a	-2
										363 ^a	+1
										388 ^a	-16
										371 ^a	-7
										365	-1

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note. All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF TESTS AND MILL DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XXVII

MILL N -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, P.S.I. Range		In- g./sheet		Across	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.
173999	WFLS	3/27/57	-	42.8	-0.8	13.8	-0.9	106	-2	306	-14	372 ^a	-26
174142	WFLS	4/15/57	1	41.7	-0.6	12.8	-0.8	114	-4	324	-59	341 ^a	-33
174143	WFLS	4/15/57	1	41.7	-0.3	12.7	-0.6	113	-2	313	-35	359 ^a	-37
174181	WFLS	4/14/57	1	43.1	-0.7	13.1	-0.5	115	-2	314 ^a	-3	371 ^a	-20
174182	WFLS	4/14/57	1	42.8	-0.3	13.4	-0.8	115	-1	319 ^a	-4	361 ^a	+1
Current Mill Average:				42.4	-0.5	13.2	-0.8	113	-3	315	-23	361	-23

TABLE XXVIII

MILL N -- 42-LB. LINERBOARD

174104	W.F.	3/2/57	1	42.8	-1.1	13.2	-0.2	119	-7	315 ^a	-51	377 ^a	-31
174105	W.F.	3/6/57	1	44.0	-1.2	13.2	-0.2	118	-4	320 ^a	-55	387 ^a	-42
174106	W.F.	3/11/57	1	43.1	-1.1	13.4	-0.4	108	-1	289	-36	381 ^a	-25
174107	W.F.	3/15/57	1	41.8	-0.1	13.2	-0.3	113	-4	290 ^a	-34	344 ^a	0
Current Mill Average:				43.0	-1.0	13.2	-0.2	114	-4	304	-45	372	-24

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA - APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XXIII

MILL O -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, P.S.I. gage		In		Elmendorf Tear, g./sheet		Across	
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
173876	W.F.LS	3/27/57	1	42.9	42.3	-0.6	12.3	12.0	-0.3	117	111	-6	331	323	-8
173877	W.F.LS	3/28/57	1	42.8	42.4	-0.4	12.3	12.0	-0.3	115	112	-3	310 ^a	323	+13
174101	W.F.LS	4/ 5/57	1	43.9	42.5	-1.4	12.9	12.3	-0.6	118	112	-6	345 ^a	321	-24
Current Mill Average				43.2	42.4	-0.8	12.5	12.1	-0.4	117	112	-5	328	322	-6
													384	394	+10

TABLE XI

MILL P -- 42-LB. LINERBOARD

173940	W.F.	3/26/57	1	43.8	42.6	-1.2	12.9	12.2	-0.7	105	110	+5	312 ^a	311	-1	356 ^a	375	+19
173941	W.F.	3/26/57	1	43.7	42.8	-0.9	12.6	12.3	-0.3	107	110	+3	313 ^a	311	-2	349 ^a	374	+25
173994	W.F.	3/31/57	2	43.7	42.7	-1.0	12.9	12.5	-0.4	107	111	+4	336 ^a	314	-22	365 ^a	384	+19
173995	W.F.	4/ 1/57	2	43.7	42.7	-1.0	12.8	12.5	-0.3	107	112	+5	309 ^a	308	-1	365 ^a	384	+19
174108	W.F.	4/ 7/57	1	44.8	43.8	-1.0	12.9	12.4	-0.5	112	119	+7	326 ^a	354	+28	374 ^a	401	+27
174109	W.F.	4/ 7/57	1	44.3	43.4	-0.9	12.8	12.1	-0.7	109	113	+4	333 ^a	343	+10	380 ^a	383	+3
174173	W.F.	4/14/57	2	43.7	42.7	-1.0	12.1	12.1	0.0	113	118	+5	312 ^a	337	+25	361 ^a	372	+11
174174	W.F.	4/15/57	2	43.6	42.4	-1.2	12.7	12.3	-0.4	110	113	+3	293 ^a	329	+36	354 ^a	371	+17
Current Mill Average:				43.9	42.9	-1.0	12.7	12.3	-0.4	109	113	+4	317	326	+9	363	381	+18

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XII

MILL Q -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i.		In		Elmendorf Tear, g./sheet	
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	IPC	Mill
174117	W.	3/29/57	4	42.5	42.2	-0.3	13.0	12.5	-0.5	113	127	379 ^a	375
174118	W.	4/1/57	2	42.4	42.5	+0.1	13.0	12.5	-0.5	112	124	353 ^a	345
174154	W.	4/2/57	2	41.9	41.8	-0.1	12.5	12.2	-0.3	114	130	348 ^a	351
174155	W.	4/11/57	4	42.9	42.6	-0.3	13.4	12.6	-0.8	110	117	378 ^a	356
Current Mill Average:				42.4	42.3	-0.1	13.0	12.5	-0.5	112	124	364	357
												384	374
												-7	-10

TABLE XIII

MILL S -- 42-LB. LINERBOARD

173882	W.F.	3/23/57	-	41.8	41.8	0.0	12.2	11.8	-0.4	105	105	349 ^a	342	325 ^a	346	+21
173883	W.F.	3/23/57	-	42.2	42.0	-0.2	12.3	11.7	-0.6	102	105	363 ^a	342	323 ^a	349	+26
174006	W.F.	3/31/57	-	43.3	42.5	-0.8	12.4	11.7	-0.7	115	112	392 ^a	320	377 ^a	337	-40
174007	W.F.	3/31/57	-	43.3	42.8	-0.5	12.5	12.0	-0.5	112	110	376 ^a	315	364 ^a	343	-21
174110	W.F.	4/9/57	-	43.2	42.8	-0.4	12.0	11.8	-0.2	107	112	357 ^a	334	353 ^a	347	-36
174111	W.F.	4/9/57	-	42.9	42.6	-0.3	12.0	11.7	-0.3	116	116	377 ^a	335	359 ^a	346	-43
Current Mill Average:				42.8	42.4	-0.4	12.2	11.8	-0.4	109	110	369	331	360	345	-15

^aThis average includes the readings for one or more specimens which were beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--APRIL 1 THROUGH APRIL 30, 1957 (continued)

TABLE XLIII

MILL R -- MISCELLANEOUS

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet		
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across	
<u>47-lb. Drum Linerboard</u>												
173884	WF2S	3/20/57	2	47.1	47.7 +0.6	13.5	13.6 +0.1	99	94 - 5	341 ^a	396	463 +103
173885	WF2S	3/21/57	2	46.9	48.0 +1.1	14.0	13.2 -0.8	97	90 - 7	352 ^a	383	425 + 48
174103	WF2S	4/10/57	2	48.4	47.7 -0.7	13.7	13.9 +0.2	98	90 - 8	390	406	453 + 23
Current Mill Average:				47.5	47.8 +0.3	13.7	13.6 -0.1	98	92 - 6	361	395	447 + 58
<u>38-lb. Linerboard</u>												
174102	WF1S	4/ 8/57	2	38.6	38.9 +0.3	11.6	11.3 -0.3	103	98 - 5	292	296	354 + 29
<u>69-lb. Linerboard</u>												
174185	WF2S	4/18/57	2	68.7	69.2 +0.5	18.7	18.2 -0.5	152	156 + 4	567	598	650 + 20

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.
Note: All "current mill average" data are calculated from the totals of the individual readings.

